

MARKED-UP SPECIFICATION

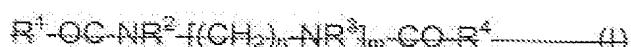
C 2944 PCT/US

17

CLAIMS

What is claimed is:

1. Use of ethoxylated derivatives of amidoamines corresponding to
5 general formula (I):



10 in which R^1 , R^2 , R^3 and R^4 independently of one another represent a hydrogen atom, a branched or unbranched alkyl or alkenyl group containing 5 to 23 carbon atoms or a $CO-CH=CH-COOH$ group and n is a number of 1 to 6 and m is a number of 1 to 8,

as an emulsifier in drilling fluids which contain at least one continuous oil phase, an aqueous phase and typical additives.

15 2. Use claimed in claim 1, characterized in that the ethoxylated derivatives contain 1 to 10 parts ethylene oxide per part amidoamine of formula (I), preferably 1 to 7 parts and more particularly 1 to 5 parts.

3. Use claimed in claims 1 and 2, characterized in that ethoxylated derivatives of amidoamines of formula (I), in which R^1 and R^4 represent an 20 alkyl and/or alkenyl group containing 5 to 23 carbon atoms and R^3 is a $CO-CH=CH-COOH$ group and/or a hydrogen atom, are used.

25 4. Use as claimed in claims 1 to 3, characterized in that amidoamine ethoxylates based on amidoamines of formula (I) are used, the compounds of formula (I) being produced by reaction of tall oil fatty acids with oligo- or polyethylene amines, preferably diethylene triamine, triethylene tetramine and/or tetraethylene pentamine.

5. Use as claimed in claims 1 to 4, characterized in that the ethoxylated derivatives are used in quantities of 0.1 to 25% by weight, preferably in

MARKED-UP SPECIFICATION

C 2944 PCT/US

18

quantities of 0.1 to 10% by weight and more particularly in quantities of 0.4 to 5% by weight, based on the weight of the drilling fluid.

6. Use claimed in claims 1 to 5, characterized in that the ethoxylated derivatives are used in drilling fluids of the water-in-oil type.
5. 7. Use claimed in claims 1 to 6, characterized in that the drilling fluids contain weighting agents, fluid loss additives, wetting agents, an alkali reserve, thickeners and/or biocides as typical additives.
8. Use of ethoxylated amidoamines as claimed in claim 1, characterized in that the ethoxylated derivatives are produced by reaction of amidoamines corresponding to formula (I) with ethylene oxide at temperatures of 100 to 150°C and preferably at temperatures of 110 to 140°C in the presence of a catalyst selected from the group consisting of potassium hydroxide or sodium methylate.
10. 9. Well servicing composition flowable and pumpable at 5 to 20°C which is based on a continuous oil phase in admixture with a limited quantity of a disperse aqueous phase (w/o invert type) and which contains optionally dissolved and/or dispersed standard auxiliaries, such as thickeners, fluid loss additives, wetting agents, fine particle weighting agents, salts, alkali reserves and/or biocides, characterized in that the composition contains the ethoxylated derivatives of claim 1 as emulsifiers.
15. 10. Well servicing composition as claimed in claim 9, characterized in that the oil phase is selected from the following classes:
 - (a) carboxylic acid esters corresponding to formula (II):
25
$$\text{R}'\text{COO}\text{R}'' \quad (\text{II})$$

where R' is a saturated or unsaturated, linear or branched C_{5-22} alkyl

MARKED-UP SPECIFICATION

C 2944 PCT/US

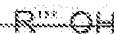
19

group and R" is a C₁₋₂₂ alkyl group which may be saturated or unsaturated, linear or branched;

5 (b) linear or branched C₈₋₂₂ olefins;

(c) water insoluble, symmetrical or nonsymmetrical ethers of monohydric alcohols of natural or synthetic origin which may contain 1 to 24 carbon atoms;

(d) water insoluble alcohols corresponding to formula (III);



(III)

10

where R''' is a saturated, unsaturated, linear or branched C₁₋₂₂ alkyl group;

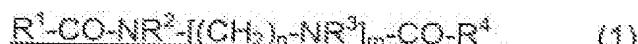
(e) carbonic acid diesters;

(f) paraffins;

15 (g) acetals.

11. (New) An ethoxylated derivative of an amidoamine according to the general formula (1):

20



in which R¹, R², R³ and R⁴ independently of one another represent a hydrogen atom, a branched or unbranched alkyl or alkenyl group containing 5 to 23 carbon atoms or a CO-CH=CH-COOH group and n is a 25 number of 1 to 6 and m is a number of 1 to 8, as an emulsifier in drilling

MARKED-UP SPECIFICATION

C 2944 PCT/US

20

fluids which contain at least one continuous oil phase, an aqueous phase and additives.

12. (New) The derivative according to Claim 11, wherein the derivative
5 contains 1 to 10 parts ethylene oxide per part amidoamine according to
formula (1).

13. (New) The derivative according to Claim 11, wherein the derivative
10 contains 1 to 7 parts ethylene oxide per part amidoamine according to
formula (1).

14. (New) The derivative according to Claim 11, wherein the derivative
15 contains 1 to 5 parts ethylene oxide per part amidoamine according to
formula (1).

15. (New) The derivative according to Claim 11, wherein R¹ and R⁴
represent an alkyl and/or alkenyl group containing 5 to 23 carbon atoms
and R³ is a CO-CH=CH-COOH group and/or hydrogen atom.

20 16. (New) The derivative according to Claim 11, wherein the compound
according to formula (1) is produced by reaction of a tall oil fatty acid with
an oligo- or polyethylene amine.

25 17. (New) The derivative according to Claim 16, wherein the
polyethylene amine is selected from the group consisting of: diethylene

MARKED-UP SPECIFICATION

C 2944 PCT/US

21

triamine, triethylene tetramine, tetaethylene pentamine, and mixtures thereof.

18. (New) The derivative according to Claim 11, present as an emulsifier in a drilling fluid in an amount of about 0.1 to 25% by weight of the total weight of drilling fluid.

19. (New) The derivative according to Claim 11, present as an emulsifier in a drilling fluid in an amount of about 0.1 to 10% by weight of the total weight of drilling fluid.

20. (New) The derivative according to Claim 11, present as an emulsifier in a drilling fluid in an amount of about 0.1 to 5% by weight of the total weight of drilling fluid.

15

21. (New) The derivative according to Claim 11, wherein the drilling fluid is a water-in-oil fluid.

22. (New) The derivative according to Claim 11, wherein the drilling fluid further comprises a component selected from the group consisting of: a weighting agent, a fluid loss additive, a wetting agent, an alkali reserve, a thickener, a biocide and mixtures thereof.

23. (New) The derivative according to Claim 11, wherein the derivative is produced by reaction of amidoamines according to formula (1) with ethylene oxide at temperatures of 100 to 150°C in the presence of a

MARKED-UP SPECIFICATION

C 2944 PCT/US

22

catalyst selected from the group consisting of potassium hydroxide or sodium methylate,

24. (New) The derivative according to Claim 11, wherein the derivative
5 is produced by reaction of amidoamines according to formula (1) with ethylene oxide at temperatures of 110 to 140°C in the presence of a catalyst selected from the group consisting of potassium hydroxide or sodium methylate.

10 25. (New) A composition, comprising:
an ethoxylated derivative of an amidamine according to the general
formula (1):

15
$$R^1-CO-NR^2-[(CH_2)_n-NR^3]_m-CO-R^4 \quad (1)$$

in which R^1 , R^2 , R^3 and R^4 independently of one another represent a hydrogen atom, a branched or unbranched alkyl or alkenyl group containing 5 to 23 carbon atoms or a $CO-CH=CH-COOH$ group and n is a number of 1 to 6 and m is a number of 1 to 8; and
20 a continuous oil phase in admixture with a limited quantity of a disperse aqueous phase (w/o invert type).

26. (New) The composition according to Claim 25, further comprising a component selected from the group consisting of a weighting agent, a fluid loss additive, a wetting agent, an alkali reserve, a thickener, a biocide and mixtures thereof.

MARKED-UP SPECIFICATION

C 2944 PCT/US

23

27. (New) The composition according to Claim 25, wherein the continuous oil phase is selected from a group consisting of;

(a) carboxylic acid esters corresponding to formula (II): R'-COO-R'

5 (II)

where R' is saturated or unsaturated, linear or branched C₅₋₂₁ alkyl group and R" is a C₁₋₂₂ alkyl group which may be saturated or unsaturated, linear or branched;

(b) linear or branched C₅₋₃₀ olefins;

10 (c) water-insoluble, symmetrical or nonsymmetrical ethers of monohydric alcohols of natural or synthetic origin which may contain 1 to 24 carbon atoms;

(d) water-insoluble alcohols corresponding to formula (III): R'''-OH where R''' is a saturated, unsaturated, linear or branched C₆₋₂₄ alkyl group;

15 (e) carbonic acid esters;

(f) paraffins; and

(g) acetals.